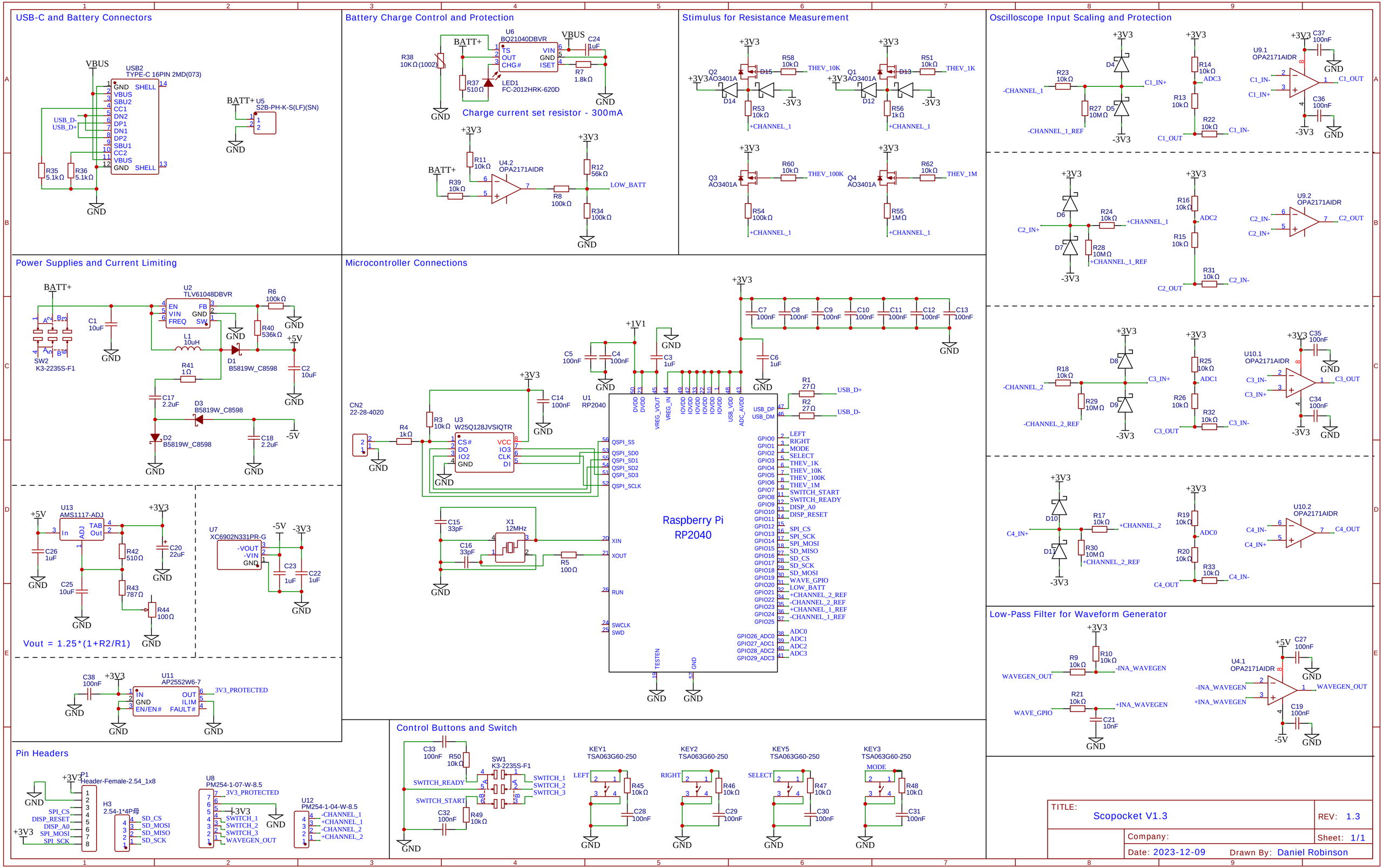
USB-C and Battery Connectors
USB2
TYPE-C 16PIN 2MD(073)
VBUS
GND
SHELL
SBU2
CC1
DN2
DP1
DN1
DP2
SBU1
CC2
USB_D-
USB_D+
R35 5.1kΩ
R36 5.1kΩ
U5
S2B-PH-K-S(LF)(SN)
Battery Charge Control and Protection
U6
BQ21040DBVR
BATT+
TS
OUT
CHG#
VIN
ISET
C24 1uF
R7 1.8kΩ
R38 10kΩ(1002)
R37 510Ω
LED1
FC-2012HRK-620D
Charge current set resistor - 300mA
U4.2
OPA2171AIDR
R11 10kΩ
R39 10kΩ
R8 100kΩ
R12 56kΩ
R34 100kΩ
LOW_BATT
Stimulus for Resistance Measurement
Q2 AO3401A
Q1 AO3401A
Q3 AO3401A
Q4 AO3401A
R58 10kΩ
THEV_10K
R51 10kΩ
THEV_1K
R60 10kΩ
THEV_100K
R62 10kΩ
THEV_1M
R53 10kΩ
R56 1kΩ
R54 100kΩ
R55 1MΩ
+CHANNEL_1
Oscilloscope Input Scaling and Protection
U9.1
OPA2171AIDR
U9.2
OPA2171AIDR
U10.1
OPA2171AIDR
U10.2
OPA2171AIDR
-CHANNEL_1
-CHANNEL_1_REF
C1_IN+
C1_IN-
C1_OUT
ADC3
R23 10kΩ
R27 10MΩ
R14 10kΩ
R13 10kΩ
R22 10kΩ
C37 100nF
C36 100nF
C2_IN+
C2_IN-
C2_OUT
ADC2
R24 10kΩ
R28 10MΩ
R16 10kΩ
R15 10kΩ
R31 10kΩ
-CHANNEL_2
-CHANNEL_2_REF
C3_IN+
C3_IN-
C3_OUT
ADC1
R18 10kΩ
R29 10MΩ
R25 10kΩ
R26 10kΩ
R32 10kΩ
C35 100nF
C34 100nF
C4_IN+
C4_IN-
C4_OUT
ADC0
R17 10kΩ
R30 10MΩ
R19 10kΩ
R20 10kΩ
R33 10kΩ
Power Supplies and Current Limiting
BATT+
SW2
K3-2235S-F1
C1 10uF
U2
TLV61048DBVR
EN
VIN
FREQ
FB
GND
SW
R6 100kΩ
R40 536kΩ
L1 10uH
D1
B5819W_C8598
C2 10uF
+5V
R41 1Ω
C17 2.2uF
D3
B5819W_C8598
D2
B5819W_C8598
C18 2.2uF
-5V
U13
AMS1117-ADJ
+3V3
C26 1uF
R42 510Ω
C20 22uF
C25 10uF
R43 787Ω
R44 100Ω
Vout = 1.25*(1+R2/R1)
U7
XC6902N331PR-G
-VOUT
-VIN
C23 1uF
C22 1uF
C38 100nF
U11
AP2552W6-7
IN
EN/EN#
OUT
ILIM
FAULT#
3V3_PROTECTED
Microcontroller Connections
CN2
22-28-4020
R4 1kΩ
R3 10kΩ
U3
W25Q128JVSIQTR
CS#
DO
IO2
VCC
IO3
CLK
DI
C14 100nF
U1
RP2040
+1V1
C5 100nF
C4 100nF
C3 1uF
C6 1uF
C7 100nF
C8 100nF
C9 100nF
C10 100nF
C11 100nF
C12 100nF
C13 100nF
R1 27Ω
R2 27Ω
USB_D+
USB_D-
USB_DP
USB_DM
QSPI_SS
QSPI_SD0
QSPI_SD1
QSPI_SD2
QSPI_SD3
QSPI_SCLK
C15 33pF
C16 33pF
X1
12MHz
R5 100Ω
XIN
XOUT
RUN
SWCLK
SWD
TESTEN
Raspberry Pi
RP2040
LEFT
RIGHT
MODE
SELECT
THEV_1K
THEV_10K
THEV_100K
THEV_1M
SWITCH_START
SWITCH_READY
DISP_A0
DISP_RESET
SPI_CS
SPI_SCK
SPI_MOSI
SD_MISO
SD_CS
SD_SCK
SD_MOSI
WAVE_GPIO
LOW_BATT
+CHANNEL_2_REF
-CHANNEL_2_REF
+CHANNEL_1_REF
-CHANNEL_1_REF
ADC0
ADC1
ADC2
ADC3
Low-Pass Filter for Waveform Generator
R9 10kΩ
R10 10kΩ
-INA_WAVEGEN
WAVEGEN_OUT
R21 10kΩ
+INA_WAVEGEN
WAVE_GPIO
C21 10nF
U4.1
OPA2171AIDR
C27 100nF
C19 100nF
Pin Headers
P1
Header-Female-2.54_1x8
SPI_CS
DISP_RESET
DISP_A0
SPI_MOSI
SPI_SCK
H3
2.54-1*4P母
SD_CS
SD_MOSI
SD_MISO
SD_SCK
U8
PM254-1-07-W-8.5
3V3_PROTECTED
SWITCH_1
SWITCH_2
SWITCH_3
WAVEGEN_OUT
U12
PM254-1-04-W-8.5
-CHANNEL_1
+CHANNEL_1
-CHANNEL_2
+CHANNEL_2
Control Buttons and Switch
C33 100nF
R50 10kΩ
SW1
K3-2235S-F1
SWITCH_READY
SWITCH_START
C32 100nF
R49 10kΩ
KEY1
TSA063G60-250
KEY2
TSA063G60-250
KEY5
TSA063G60-250
KEY3
TSA063G60-250
R45 10kΩ
R46 10kΩ
R47 10kΩ
R48 10kΩ
C28 100nF
C29 100nF
C30 100nF
C31 100nF
TITLE:
Scopocket V1.3
REV: 1.3
Company:
Sheet: 1/1
Date: 2023-12-09
Drawn By: Daniel Robinson